

**10/525592****CLAIMS**

1. A method of bonding a polymer surface to an electrically conductive or semiconductive surface,  
5 which method is characterized in that it comprises:  
    a) the electrografting of an organic film onto the conductive or semiconductive surface, and then  
    b) an operation of bonding the polymer surface to the conductive or semiconductive surface thus  
10 grafted.
2. The method as claimed in claim 1, characterized in that the electrografting of the organic film is electroinitiated grafting.  
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3. The method as claimed in claim 2, characterized in that the organic film is a polymer film.
4. The method as claimed in claim 3, characterized in  
20 that the polymer film is obtained from monomers and/or prepolymers that are partly or completely functionalized by vinyl groups.
5. The method as claimed in claim 4, characterized in  
25 that the polymer film is obtained from a vinyl monomer chosen from acrylonitrile, methacrylonitrile, acrylates and methacrylates, acrylamides and methacrylamides, cyanoacrylates, acrylic acid and methacrylic acid, styrene, vinyl halides, N-vinylpyrrolidone,  
30 2-vinylpyridine, 4-vinylpyridine and vinyl-terminated telechelic compounds.
6. The method as claimed in claim 3, characterized in that the polymer film is obtained from monomers and/or

prepolymers that are partly or completely functionalized by cyclic groups that can be cleaved by nucleophilic or electrophilic attack.

- 5     7.    The method as claimed in claim 2, characterized in that the organic film is obtained from diazonium, sulfonium, phosphonium or iodonium salts, or mixtures thereof.
- 10    8.    The method as claimed in any one of the preceding claims, characterized in that the bonding operation consists of hotmelt bonding or cold bonding or a combination of the two.
- 15    9.    The method as claimed in claim 8, characterized in that the cold bonding is carried out by means of a substance capable of dissolving or swelling the polymer surface to be bonded and the organic film electrografted onto the conductive or semiconductive
- 20    surface.
10.   The method as claimed in any one of the preceding claims, characterized in that the polymer constituting the polymer surface is chosen from polyethylenes;
- 25    polypropylenes,    polystyrenes,    polyacrylonitriles,    polysiloxanes,    polyesters,    polyorthoesters,    polycaprolactones,    polybutyrolactones,    polyacrylics,    polymethacrylics,    polyacrylamides,    epoxide resins,    copolymers thereof and blends thereof.
- 30    11.   The method as claimed in any one of the preceding claims, characterized in that the polymer constituting the polymer surface is a hotmelt polymer.

12. The method as claimed in any one of the preceding claims, characterized in that the polymer surface is a polymer film coating a conductive or semiconductive material.

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13. The application of the method as defined in any one of claims 1 to 12 to the manufacture or renovation of composites intended for the aerospace, aeronautical, automotive, biomedical, microelectronics and  
10 microsystems industries.

14. The application of the method as defined in any one of claims 1 to 12 to the manufacture of implantable surgical and medical instruments.

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15. The application of the method as defined in any one of claims 1 to 12 to the assembly of sensitive components of microsystems or to the packaging of microsystems.

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16. A structure comprising an electrically conductive or semiconductive surface that is bonded to a polymer surface via an organic film with a thickness of less than 1  $\mu\text{m}$ .

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17. A structure comprising an electrically conductive or semiconductive surface that is bonded to a polymer surface via an organic film, in which structure said organic film is bonded to said conductive or  
30 semiconductive surface by covalent bonds.